chemoradiation (60 Gy, 2 Gy per fraction). Ipsilateral (iSVZ), contralateral (cSVZ), and bilateral (bSVZ) SVZs were retrospectively segmented following two delineation methods: with (TH+) and without (TH-) temporal horns. Dose-volume histograms were retrospectively generated on the original plans. Progression was defined according to the RANO criteria. Multivariate analysis using the Cox proportional hazards model including significant covariates in univariate analysis was assessed to examine the relationship between prognostic factors and time to progression (TTP).

Results: Median age was 59 years (range: 25-85). Median follow-up, OS and TTP were 52.8 months (95% CI 43.4-61.1), 26.2 months (95% CI 20.3-34.2) and 6.4 months (95% CI 4.4-9.3), respectively. On univariate analysis, initial contact to SVZ was a poor prognostic factor for OS (20.5 vs 56.4 months, p = 0.011) and TTP (4.6 vs 12.9 months, p = 0.002). With TH-method, patients receiving mean dose to bSVZ greater than 40 Gy had a significantly improved TTP, as well as patients whose V20 Gy to bSVZ was greater than 84% (17.7 months vs 5.2 months, p = 0.017). On multivariate analysis, initial contact to SVZ and V20 Gy to bSVZ lesser than 84% remained poor prognostic factors for TTP (HR = 3.07, p = 0.012 and HR 2.67, p = 0.047, respectively).

Conclusion: Our results suggest that contact to SVZ, as well as insufficient bSVZ coverage such as a V20 Gy lower than 84%, are independent poor prognostic factors for TTP. Therefore, targeting SVZ is of crucial interest for optimizing glioblastoma treatment.

PO-0648
Pilot study in the assessment of contouring variability in stereotactic radiosurgery
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Purpose or Objective: The accuracy in contouring the target is one of the key factors for the success of stereotactic radiosurgery (SRS). This is particularly important when delivering one large fraction of radiation with small or no margins, since the consequence of not defining the correct clinical target volume can be that intended treatment results are not achieved. Furthermore, accurate contouring of the relevant Organs-at-Risk (OARs) is essential to minimize any normal tissue toxicity. The aim of this study was to analyze and quantify the variability of target and OAR contouring for two lesions in the brain.

Material and Methods: A multicenter analysis of the variability in contouring the target and the OARs for two typical cases of brain disorders, a cavernous sinus meningioma and a vestibular schwannoma was performed. Twelve Gamma Knife centers from around the world have participated in the study by contouring the targets and the OARs. The resulting treatment plans were analyzed with respect to the agreement in target and OARs contouring. The 50 %-agreement volume, AV50, and the common volume, AV100, together with the encompassing volume, AV100/N, were determined based on a binary analysis method. A novel metric for the variability in delineation defined as the Agreement-Volume-Index was introduced and additionally calculated. The variability of the contoured structures was also analyzed with respect to the position of their centers of mass (COMs).

Results: Substantial disagreement in target delineation was observed with an Agreement-Volume-Index of 0.22 for the meningioma case and 0.50 for the vestibular schwannoma case, respectively. Very high disagreement was also observed for the delineation as OARs of the optic apparatus and cochlea with an Agreement-Volume-Index ranging from 0 to 0.13. The disagreement was observed with respect to the shape, size and position of the contoured volumes. The resulting disagreement in target volumes was highest for the meningioma (range 5.29-7.80 cm3) while a lower disparity was observed for the schwannoma (range 3.56-4.48 cm3). The majority of structures analyzed displayed the highest disagreement of the COM in longitudinal direction. An illustration of the displacement of the COMs together with the common volume and encompassing volume is shown in Figure 1 for the cavernous sinus meningioma case.

Figure 1. Illustration of the displacement of the COMs (red dots) together with the common volume (blue) and encompassing volume (green) for the cavernous sinus meningioma case.

Conclusion: Differences in target and OARs contouring expressed using different parameters, including a novel metric, emphasize the importance of further investigating and standardizing the variability. Therefore, significant differences in target and OARs delineation might lead to the need of better contouring tools, education and standardized protocols in SRS.

PO-0649
Evaluation of distant brain failure among patients undergoing SRS for lung cancer brain metastases
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Purpose or Objective: The latency, overall extent, and rate, of distant brain failure for non-small cell lung cancer patients undergoing SRS for brain metastases is not well characterized. We evaluated the impact of multiple pre-treatment parameters including age, KPS, extracranial disease status (ECD), initial number of metastases, initial aggregate tumor volume, and histological/molecular subtypes, on distant brain failure. We also evaluated the impact of WBRT performed before, combined with, or after SRS.

Material and Methods: The retrospective study population included 118 NSCLC patients with brain metastases treated with SRS between 11/2008 and 01/2014. The distant brain metastasis-free survival (DBMFS) was defined as latency in months from initial SRS to first subsequent radiographic evidence of new brain metastasis. The extent of overall distant brain failure (DBF) was defined as the total number of new metastases that developed following initial SRS treatment. The distant brain failure rate (DBFR) was defined as the ODBF/RFI where RFI was defined as the maximum radiographic follow-up interval in months. Kaplan Meir analysis was used to evaluate DBMFS and Log Rank test was used to determine the significance (p-value <0.05 was considered significant). For ODBF and DBFR, Independent